

INDOOR AIR POLLUTANTS AND RESPIRATORY HEALTH IN THE UNITED ARAB EMIRATES (UAE)

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Background and Aims: In the last forty years, the UAE has undergone rapid transition to become an industrialized nation. Little is known about the indoor air pollutant exposures and potential health effects in the Arab Gulf region.

Methods: We conducted a cross-sectional study in a stratified sample of 628 households in urban and rural areas and all seven emirates in the UAE from October 2009 to May 2010. Indoor air pollutants (nitrogen dioxide NO_2 , sulfur dioxide SO_2 , hydrogen sulfide H_2S) were measured using passive diffusion samplers over a seven-day period in a common living area. Information on environmental exposures, respiratory symptoms was collected from selected household members in each family via in-person interviews using validated questionnaires.

Results: A total of 1590 adults ($n=1009$), adolescents ($n=330$), and children ($n=253$) from 628 households were surveyed. Thirty percent ($n=548$) of our study sample lived in households with detectable sulfur dioxide (range 0.010-0.507 ppm), and 9% lived in households with detectable indoor NO_2 (range 0.006-0.48 ppm). Indoor SO_2 was associated with ever wheezing, Prevalence odds ratio (POR) 1.79 [95% confidence interval (CI) 1.05, 3.05]; wheezing in the last 4 weeks POR 4.63 [95% CI 1.33-16.19]; speech limiting wheeze in the last 12 months 3.53 [95% CI 1.06-11.74]; and diagnosed asthma POR 1.95 [95% CI 1.13-1.36]. Indoor NO_2 was associated with diagnosed asthma (POR) 2.34 [95% Confidence Interval (CI) 1.11, 4.93]; dry cough not from cold, POR 1.90 [95% CI 1.0-3.60]; and sinus infections in the last 12 months POR 1.77 [95% CI 1.07-2.94].

Conclusions: Our research found in this Gulf nation population, those living in households with measurable SO_2 and NO_2 experienced increased frequency of respiratory related symptoms and diagnosed asthma. Further research is needed to better characterize both the sources of exposure and the health effects of indoor air pollutants in the home.